CLAIMS:

1. An acceleration sensor assembly for a restraint retractor of a seat restraint system in a vehicle comprising:

an acceleration sprocket operatively connected to the restraint retractor;

an acceleration pawl cooperating with said acceleration sprocket to operatively cause lock up of the restraint retractor;

an inertia member cooperating with said acceleration pawl to move said acceleration pawl when an acceleration force is present;

a gimbal to support the inertia member; and

a non-contact damping mechanism cooperating with said gimbal to dampen movement of said gimbal until the acceleration force exceeds a predetermined value and said inertia member actuates said acceleration pawl to engage said acceleration sprocket to operatively cause lock up of the restraint retractor and prevent unwinding of a belt from the restraint retractor.

2. An acceleration sensor assembly as set forth in claim 1 wherein said damping mechanism is of a magnetic type.

3. An acceleration sensor assembly as set forth in claim 1 wherein said damping mechanism is of an eddy current magnetic type.

4. An acceleration sensor assembly as set forth in claim 1 wherein said damping mechanism comprises at least one magnet and at least one electric conductive member for cooperating with said at least one magnet.

5. An acceleration sensor assembly as set forth in claim 4 wherein either one of said at least one magnet and said at least one electric conductive member is connected to said gimbal.

6. An acceleration sensor assembly as set forth in claim 4 including a focusing member disposed below said gimbal.

7. An acceleration sensor assembly as set forth in claim 6 wherein said focusing member is generally U shaped, either one of said at least one electric conductive member and said at least one magnet being disposed within said focusing member.

8. An acceleration sensor assembly as set forth in claim including an out-of-range sensor connected

to said gimbal and cooperating with said acceleration pawl to lock the restraint retractor when a seat back of a seat is reclined outside a range of a predetermined operating angle.

9. An acceleration sensor assembly as set forth in claim 8 wherein said out-of-range sensor includes a projection cooperating with said acceleration pawl to lock the restraint retractor when the seat back is reclined forward outside the range of the predetermined operating angle.

10. An acceleration sensor assembly as set forth in claim 1 wherein said acceleration pawl is positioned collinearly to a pivoting axis of said gimbal.

11. An acceleration sensor assembly as set forth in claim 4 wherein said at least one electric conductive member comprises a pair of laterally spaced plates, said at least one magnet being disposed between said plates.

12. An acceleration sensor assembly as set forth in claim 4 wherein said gimbal has a projection extending therefrom, said at least one magnet being connected to said projection.

13. An acceleration sensor assembly as set forth in claim 7 wherein said at least one electric conductive member is generally U shaped, said at least one magnet being disposed within said at least one conductive member.

14. An acceleration sensor assembly as set forth in claim 4 wherein said at least one magnet is connected to a bottom of said gimbal.

15. An acceleration sensor assembly as set forth in claim 14 wherein said at least one electric conductive member is generally arcuately shaped, said at least one electric conductive member being disposed beneath said at least one magnet.

16. An acceleration sensor assembly as set forth in claim 4 wherein said at least one electric conductive member is connected to said gimbal.

17. An acceleration sensor assembly as set forth in claim 16 wherein said at least one magnet is disposed beneath said at least one electric conductive member.

18. An acceleration sensor assembly as set forth in claim 4 wherein said at least one electric conductive member and said at least one magnet has a vertical arrangement.

19. An acceleration sensor assembly as set forth in claim 4 wherein said at least one electric conductive member and said at least one magnet has a horizontal arrangement.

20. An acceleration sensor assembly as set forth in claim 1 including a support housing operatively connected to the restraint retractor, said gimbal being pivotally connected to said support housing.

21. A restraint retractor assembly for a seat restraint system in a vehicle comprising:

a retractor housing;

a rotatable shaft mounted to said retractor housing;

a take-up spool mounted on said shaft and connected to a belt of a seat restraint system for winding and unwinding the belt;

a locking sprocket operatively connected to said shaft;

a locking pawl cooperating with said locking sprocket to lock up said restraint retractor;

an acceleration sprocket operatively cooperating with said locking pawl;

an acceleration pawl cooperating with said acceleration sprocket;

an inertia member cooperating with said acceleration pawl to move said acceleration pawl when an acceleration force is present;

a gimbal to support said inertia member; and

a non-contact damping mechanism cooperating with said gimbal to dampen movement of said gimbal until the acceleration force exceeds a predetermined value and said inertia member actuates said acceleration pawl to engage said acceleration sprocket to operatively cause lock up the restraint retractor and prevent unwinding of a belt from the restraint retractor.

22. A restraint retractor assembly as set forth in claim 21 wherein said damping mechanism comprises at least one magnet and at least one electric conductive member for cooperating with said at least one magnet.

23. A restraint retractor assembly as set forth in claim 22 wherein either one of said at least one magnet

and said at least one electric conductive member is connected to said gimbal.

24. A seat restraint system for a vehicle comprising:

a restraint retractor for operative connection to a seat in the vehicle and connected to a belt of a seat restraint system for winding and unwinding the belt;

an acceleration sprocket operatively connected to said restraint retractor;

an acceleration pawl cooperating with said acceleration sprocket to operatively cause lock up of said restraint retractor;

an inertia member cooperating with said acceleration pawl to move said acceleration pawl when an acceleration force is present;

a gimbal to support said inertia member; and

a non-contact damping mechanism cooperating with said gimbal to dampen movement of said gimbal member until the acceleration force exceeds a predetermined value and said inertia member actuates said acceleration pawl to engage said acceleration sprocket to operatively cause lock up the restraint retractor and prevent unwinding of a belt from the restraint retractor.

25. A seat restraint system as set forth in claim 24 wherein said damping mechanism comprises at least one magnet and at least one electric conductive member for cooperating with said at least one magnet.

26. A seat restraint system as set forth in claim 25 wherein either one of said at least one magnet and said at least one electric conductive member is connected to said gimbal.